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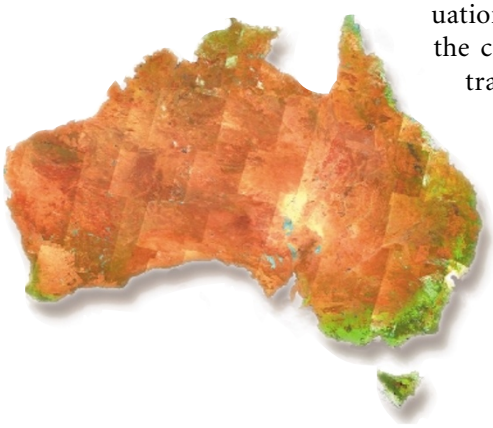
Breaking waves down under

The Australian federal government's announcement in May, that it will invest AUS$614 million (US$404 million) over the next six years in the nation's major health and medical research funding agency, has brought its biomedical research sector back from a precarious edge. This unprecedented federal commitment, which will effectively double the existing budget of the National Health and Medical Research Council (NHMRC) by the year 2005, was catalysed by the 'Health and Medical Research Strategic Review'. Informally known as the 'Wills Review' (it was led by Peter Wills, chairman of the Garvan Institute of Medical Research, Sydney), it represents the most comprehensive evaluation of the nation's biomedical sector in 20 years, exposing cracks in the current system and outlining what actions must be taken if Australian biomedical research is to remain internationally competitive.



New perspective on Australia. Composite satellite image provided by CSIRO (Australia); data supplied by European Space Agency and Daresbury Rutherford Appleton Laboratory (UK).

Australia prides itself on being a strong player in the biomedical research field—with 2.5% of the world's health and medical research publications—yet it has managed on comparatively meagre resources. The public expenditure on biomedical R&D is AUS$28 (US$17) per capita, compared with an average expenditure of approximately AUS$66 per capita for developed nations, as determined by the Organisation for Economic Co-operation and Development. Perpetually starved of adequate public funds, the NHMRC struggled to award 23% of grant applications for 1999 by spreading the funding thinly, providing researchers with levels substantially below international benchmarks. Although the number of project grants awarded relative to its population is similar to that of the US's National Institutes of Health (NIH), the average NIH grant is worth more than twice that of an average NHMRC grant, after adjusting for differences in grant infrastructure. Limited research funding, combined with low remuneration, job insecurity and stunted career development, were among the key motivations for Australian researchers to emigrate, according to the 1995 'Brain Drain Survey', conducted by the Australian Society for Medical Research (ASMR). "The government's announcement comes at a critical time, as young scientists in particular were becoming discouraged about the future of their research careers in Australia," says Andrew Sinclair, of the University of Melbourne, and one of the Directors of ASMR. "The response of the research community is euphoric, to say the least."

The government will respond to the recommendations of the Wills Review in June, but Wills is confident that, with the funding now available, the comprehensive strategy for reforming Australian health and medical research will be fully endorsed. Priorities include a restructuring of NHMRC management (with the appointment of a full-time Chief Executive Officer), an increase in the number, size and duration of basic research grants, and resourcing of 'priority-driven' research programs that focus on issues directly relevant to the nation's health. Central to the Review is a strategy to strengthen ties between the research and industrial sectors and to encourage an entrepreneurial spirit within the scientific community by equipping researchers with the skills and infrastructure to identify and capitalize on emerging innovations. Suzanne Cory, Director of the Walter and Eliza Hall Institute, Melbourne, indicates that, aside from procuring more funding, the discussion and lobbying generated by the Wills Review "instigated a groundswell of change within the academic community by heightening awareness that we need to create a much better nexus between research discovery and commercialization in this country".

The major barrier to shifting Australian biomedical innovations from bench top to marketplace is limited investment from biotechnology and pharmaceutical quarters. Australia's biotechnology industry is currently restricted by lack of venture capital flow, which is due in turn to one of the highest rates of capital gains tax in the world. US-based pension funds, a major source of venture capital, seek global opportunities for technology investment but have steered clear of Australian shores because of the inability to establish limited liability partnerships under favourable investment conditions. In addition, Australian health and medical R&D has one of the lowest levels of investment by the pharmaceutical industry among developed nations. Moreover, most industrial investment is directed towards clinical trials, rather than development of intellectual property. Suppressed pharmaceutical R&D investment is partly due to noncompetitive taxation rates, the nation's pharmaceutical pricing policy, unstable investment incentives and the lack of initial venture capital interest to bring discoveries to an advanced stage of development where a pharmaceutical company is willing to invest.

Nevertheless, the future of Australian biotechnology is looking brighter. The Australian taxation system will be reviewed over the coming months, and early indications are that the government will bring its policy in line with competitive rates offered elsewhere in the world, creating opportunities for venture capital investment. The biotechnology sector has also received an increase in public expenditure, and a new federal council, Biotechnology Australia, will be established to develop strategies for the commercialization of research innovations. While fueling the momentum of Australian biotechnology, the government has been prudent to ensure that public safety and confidence are not left behind, with the establishment of a statutory office—the Office of the Gene Technology Regulator—which will operate within existing mechanisms to regulate the application of biotechnology discoveries, and the Biotechnology Awareness Program, which will inform the public and address national concerns about developments in the industry.

While these changes come as a much-needed morale boost for the biomedical research sector, the challenge will be making the most of the resources available to attain the critical mass needed to compete at an international level. Melissa Little, of the University of Queensland, emphasizes that "although fundamental research must continue to be driven by the investigator, there is a need to consolidate resources and coordinate research efforts." The research community is taking steps in this direction, with the emergence of integrated facilities that benefit from shared management, infrastructure and research expertise. These efforts signal the nation's realization that its success in biomedical research will come from thinking and organizing at a national—rather than local—level.